



DOVERLUBE DFA-1535EM

An Emulsifiable Lubricant Designed for Water-Based Muds (WBM), Coiled-Tubing (CT), and Snubbing in Fresh-water, Produced-Water, and Divalent Heavy Brine

Doverlube DFA-1535 EM is an innovative, patent-pending, non-polluting, non-aromatic, concentrated (non-diluted), fresh-water and brine dispersible, sulfurized lubricant additive containing emulsifiers which allow the lubricant to be dispersed in divalent brine or produced water rotary-drilling and coiled- tubing fluids.

DFA-1535EM is highly reactive to both metal and silicate surfaces; therefore it can be used to reduce friction generated by both metal-to-metal and metal-to-shale contacts. It is used to increase **ROP**, reduce pipe-on-pipe friction, torque, drag, stuck pipe, and bit-balling.

DFA-1535EM reduces torque/friction by up to **80%** for both conventional **rotary** and **coiled-tubing** (CT) drillings at 1 wt% usage level in water and divalent brine -based fluid formulae.

DFA-1535EM was recorded in the field to allow to our customers to drill out hundreds of plugs for zone fracking in Permian wells at much higher speed.

Some Applicable Lubricity Data from Dover Laboratory:

Application	Fluid Base	COF	% Friction Reduction
CT Fluid	Permian brine		78%
CT Fluid	10-lb CaCl ₂	0.069	85%
CT Fluid	Bakken brine		73%
WBM	Fresh water	0.110	70%
WBM	Permian brine	0.080	80%
WBM	Bakken brine	0.090	74%

DFA-1535EM can be applied by mixing 1-3 vol % level or by adding as a sweep into circulating drilling fluids.

TYPICAL PHYSICAL PROPERTIES

Property	Typical Result
Appearance	Dark, brown liquid
Viscosity, cSt, 100F	85
Specific Gravity, 60F	1.02
Lb/gal , 60F	8.5
Flash point, COC, F	360
Pour Point, C	-15

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